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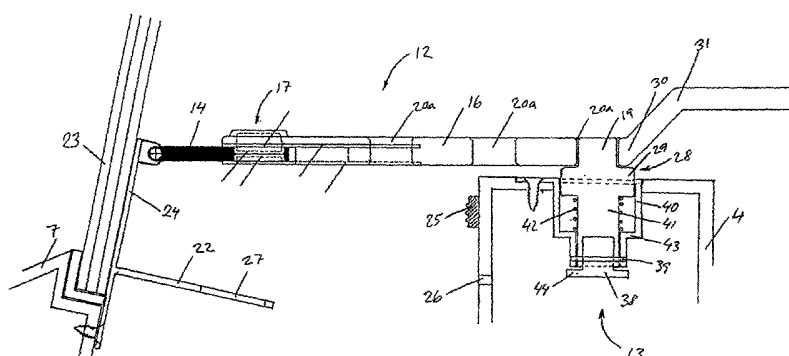
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(54) Title: DEVICE CONSISTING OF A STAY DEVICE AND A LOCK DEVICE PLUS A WINDOW CONSTRUCTION WITH SUCH A DEVICE



(57) Abstract: A device consisting of a stay device (12) and a lock device (13), and a window construction (1) comprising a frame (2) composed of several frame members (3, 4, 5, 6), a sash (7) pivotally connected to the frame (2) and composed of several sash members (8, 9, 10, 11), and a device consisting of a stay device (12) and a lock device (13), which stay device (12) comprises a first portion (14) hingedly connected at a sash member (8, 9, 10, 11) with a hinge axis (15) and a second portion (16) pivotally connected to the first portion (14) in a joint (17) with a swivelling axis (18), where the stay device (12) can be operated for displacement toward a frame member (3, 4, 5, 6) by turning about the hinge axis (15) to a first position for engagement between a second engagement means (19) provided at the frame member (3, 4, 5, 6) and a first engagement means (20) correspondingly provided at the stay device (12) and being rotationally locked in relation to said second portion (16), and that the stay device (12) can be operated to subsequent turning movement about the swivelling axis (18) to a second position where a locking is established between an active lock part (38) and a passive lock part (22), the active lock part being able to turn about an axis of rotation essentially coaxial with the swivelling axis (18) when the stay device is in its first position.

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Device consisting of a stay device and a lock device plus a window construction with such a device.

The present invention relates to a device consisting of a stay device with a first portion and a second portion pivotally connected to the first and with a first engagement means rotationally locked in relation to the second portion, which first portion in a mounted state is adapted to be hingedly connected to a movable sash member of a window, a second engagement means which in a mounted state is arranged at a frame member of a window, which engagement means are mutually form-fitted, and a lock device.

Further, the invention relates to a window construction comprising a frame composed of several frame members, a sash pivotally connected to the frame and composed of several sash members, and a device consisting of a stay device and a lock device, which stay device comprises a first portion hingedly connected at a sash member with a hinge axis and a second portion pivotally connected to the first portion in a joint with a swivelling axis.

Various courses of the hinge axis are possible, however, it is preferred that the hinge axis is parallel to the sash member, as this provides an advantageous, almost intuitive control.

The swivelling axis is preferably arranged skewly in relation to said hinge axis, such that the two axes are neither crossing nor parallel, as these two possibilities would not fully provide the desired functionality.

A stay device of this type is known from DE-A-195 42 601. The disclosed stay device is character-

ized in that its second portion can be not only turned in relation to the first portion, but also displaced in relation hereto. The ability to turn is in a preferred embodiment obtained in that the joint
5 between the two portions of the device is made by a bolt, rivet or the like, through holes in the ends of the two portions of the device. The mobility is obtained in that the hole in the second portion of the device is oblong and can thus extend over the bolt or
10 rivet.

When closing the window as disclosed in DE-A-195 42 601, the window is pulled by means of the second portion of the device guided in a U-shaped fitting on the frame. The inner hole in the second portion of the device, i.e. the hole closest to the
15 pane, is form-fitted on a projection provided on the outside of the U-shaped fitting, i.e. between the fitting and the pane. The closing is subsequently assured in that the second portion of the device is
20 turned so as to be essentially perpendicular to the first portion, the edge of the second portion of the device abutting on an upright edge on the inside of said fitting. When the second portion of the device is then pushed toward the joint, the oblong hole be-
25 ing displaced over the bolt or rivet so as to enter into contact with the other end of the hole, the edge of the second portion of the device will abut on both the upright edges of said U-shaped fitting. Since the second portion of the device is now placed crosswise
30 in relation to the U-shaped fitting, and since the compressive stress produced in the weather strip of the window during closure, the first portion of the device is drawn outward and the window is now in a

stable condition.

A disadvantage of this design is that the movable parts are exposed. This means both that there is a risk of having fingers caught in said parts during operation and that dust and dirt can be collected in the mechanism, which is not appropriate neither for aesthetic nor functional reasons. Of course, a flashing can be created for the closing mechanism, however, the movements of particularly the second portion of the device would imply a relative large and bulky construction with large openings which would only be efficient to a limited extent in keeping out the dirt. Furthermore, a flashing would complicate a correct use of the closing mechanism, as it would be difficult to verify when the second portion was displaced sufficiently far in relation to the joint in order to obtain a secure closing.

Another inconvenience of this stay device is that also in its locked state, it projects relatively far in the room behind the window, which means that it may get in the way for a possible user of the window frame and has also a damaging effect on the aesthetic side of the window in its entirety.

In the above stay device, the first portion is secured directly to the sash of the window. However, certain types of windows as e.g. some skylights are provided with a sash fitting around the frame in such a way that the sash itself is not accessible from the inside when the window is closed. In order to permit the use of known stay devices in connection with such windows, the first portion of the stay device has as an experiment been glued to the window glass, as e.g. in US 4,986,039. However, this turned out to be un-

suitable, as ordinary window glass cannot endure the pull perpendicular to the plane of the glass caused by pulling the window to the closed position.

Therefore, the object of the invention is to
5 provide a device consisting of a stay device and a lock device, which device is of a simple structure and permits a simple operation and secure locking.

This object is obtained in that the lock device has a passive lock part adapted to be connected to
10 the sash member in a mounted state and an active lock part adapted to be arranged in a mounted state at the frame member where the active lock part is arranged such that it can be operated by the stay device. This device permits a secure locking with few parts.

15 In order to further optimise the device, the active lock part is provided in a movable key portion adapted for rotationally locked engagement with the first engagement means, a device being obtained with built-in lock function which requires no independent
20 operation.

An additional functionality can be obtained in that the stay device is provided with at least one retaining means, the stay device being able to retain the window in an open ventilation position.

25 A second object of the invention is to provide a window construction with a stay device and a lock device permitting a secure locking of the window by a simple operation and the use in windows with a sash fitting around the frame in the closed position.

30 This object is obtained in that the stay device can be operated for displacement toward a frame member by turning about the hinge axis to a first position for engagement between a second engagement means

provided at the frame member and a first engagement means correspondingly provided at the stay device and being rotationally locked in relation to said second portion, and that the stay device can be operated to
5 subsequent turning movement about the swivelling axis to a second position where a locking is established between an active lock part and a passive lock part, the active lock part being able to turn about an axis of rotation essentially coaxial with the swivelling
10 axis when the stay device is in its first position. A very simple operation is thus obtained, as closing and locking take place in two successive steps, and the locking is made automatically without the user having to take further steps.

15 The engagement means may be designed in different ways, however, according to a particularly simple construction, the second engagement means is a projection, whereas the first engagement means is an opening.

20 According to an alternative embodiment, the second engagement means is an opening, whereas the first engagement means is a projection, one of the advantages being that the frame member can be designed without essentially projecting parts. The
25 frame member thus being without projections entails less risk of damage on e.g. clothes or persons as nothing on the frame member may seize the clothes or injure a person.

To obtain the possibility of keeping the window
30 open in one or more ventilation positions, at least two engagement means are according to an embodiment provided in the stay device.

According to an embodiment, one of the engage-

ment means constitutes a rotational key portion which, when turned, brings the active lock part into or out of engagement with the passive lock part, which provides an appropriate simple construction as
5 at the same time, the engagement means activates the lock without use of further elements or independent operation of the lock.

A particularly simple construction can be obtained in that the engagement means constitute the
10 lock parts. Separate lock parts may be saved and the necessary adaptation of the frame member can be reduced to a minimum, and at the same time the smallest possible number of parts entails a smaller risk of malfunction.

15 To obtain an increased securing against unintentional opening of the window, the passive lock part is according to an embodiment a separate element connected to the sash.

For a further securing, the second portion of
20 the stay device can comprise means for engagement with a retaining means arranged at the frame member, when the stay device is in said second position such that from the locked position, the stay device can only be operated in one direction, an inexperienced
25 operator soon realizing how the stay device is to be operated for the lock to be released. The retaining means and the stay device can further be adapted to require a relatively large force for release of the stay device from the retaining means such that the
30 window is secured against opening by a child.

In the following, the invention will be described in more detail by means of the embodiment examples and with reference to the drawing, where

Fig. 1 is a perspective sketch view of a window construction,

Fig. 2 is a section of a window construction comprising a stay device,

5 Fig. 3a is a view of the stay device in a first position,

Fig. 3b is a view of the stay device in a second position,

Fig. 4 is exploded view of the stay device,

10 Fig. 5a is a view from below of a stay device of an alternative design,

Fig. 5b is a side view of the stay device according to Fig. 5a,

15 Fig. 6 is a view from above of an element with an engagement means,

Fig. 7a is sketch view of the stay device in a position before engagement,

Fig. 7b is a sketch view of the stay device in an engagement position,

20 Fig. 7c is a sketch view of the stay device in a locked position, and

Fig. 8 is a view of an active lock part and a passive lock part.

The sketch view according to Fig. 1 shows
25 slightly in perspective a window construction 1 comprising a frame 2 composed of several frame members 3, 4, 5, 6, and sash 7 pivotally connected to the frame 2 and composed of several sash members 8, 9, 10, 11, and a pane 23 mounted in the sash 7.
30 The window construction 1 is in the shown design top-hung, a not shown hinge being provided between the top frame member 6 and the top sash member 9. However, the window construction 1 might as well

instead be provided with hinges between opposite side members 5, 8; 3, 10 of the frame and sash, respectively, or with a hinge axis at the centre of e.g. sash side members to form a centre-hung window or the like.

A stay device 12 is provided at a sash member 8, 9, 10, 11, and an embodiment hereof is shown in Fig. 2 which is a section through a bottom frame member 4, a bottom sash member 11 and the stay device 10 connecting the two members 4, 11, the window being in an open ventilation position. The stay device 12 comprises, as shown, a first portion 14 hingedly connected to the centre piece 24 with a hinge axis 15 parallel to the sash member 11, and a second 15 portion 16 rotationally connected to the first portion 14 in a joint 17 with a swivelling axis 18. The first portion 14 and the second portion 16 are preferably in extension of each other essentially in a common plane, and with a swivelling axis perpendicular to this plane, a simple construction being 20 thus obtained, however, the stay device 12 may also be conceivable in designs where the first portion 14 and the second portion 16 are not in a common plane. The axis of rotation and the swivelling axis 25 18 are arranged mutually skewly such that the two axes are not crossing, and the axis of rotation 16 extends preferably in the plane of the portion 14 and the swivelling axis 18 extends perpendicularly to this plane. In the shown design, the window construction is of the type where the sash 7 fits beyond the frame 2 such that the securing of the stay device 12 is effected via a centre piece 24 which intersects the weather strip 25 in the closed posi-

tion of the window. In order to avoid that this centre piece 24 acts as a cold bridge causing condensation on the inside of the window, it is preferably produced of a material with a relatively low thermal conductivity and preferably also with a cross-sectional area as small as possible. Furthermore, the material thickness perpendicular to the weather strip plane must be small for the weather strip 25 to fit tightly. For a further improvement of prevention of condensation, the first portion 14 of the stay device can be provided with a relatively large cross-sectional area in relation to the centre piece 24 and of a material with a good thermal conductivity. By way of example, the centre piece 24 can be produced of steel and the first portion 14 of the stay device of aluminium with a cross-sectional area which is about four times as large as the cross-sectional area of the centre piece. The heat is thus drawn out toward the pane 23 and the sash 7 through the first portion 14 of the stay device, whereas the centre piece 24 only to small extent conducts cold inward. The dew point is thus moved outward.

On the inside of the sash 7, a passive lock part 22 projects in the direction of the frame 2. In the frame 2 here designed as a hollow profile, an opening 26 is provided to allow the passive lock part 22 to penetrate in the interior of the frame profile, when the window is closed. The frame 2 is provided with a lock device 13 with an active lock part 38 adapted for engagement in an opening 27 in the passive lock part 22. How this engagement is initiated and terminated, will be explained later.

In the frame 2 of the window, a lock device

13 is secured and comprises a second engagement means 19 in the form of a projecting portion of a rotational key portion 28, which projecting portion projects in relation to the surface of the frame. As it appears, the key portion 28 comprises a shoulder or corbel 29 which, in the shown inactive position of the lock device 13, also projects from the surface of the frame. The lock device and the key portion will be explained in more detail below. The projection fits in a second engagement 20 in the stay device 12 and retaining means 20a, which retaining means 20a and which engagement means 20 can, as shown, be openings in the second portion 16 of the stay device, and in Fig. 2, it is placed in the outer opening such that the window is retained in its most open position. If one of the openings closer to the first portion 14 of the stay device is chosen, the opening slit of the window will of course be smaller.

Number, dimensions and cross-sectional forms of the openings can be varied. It is merely required that the stay device 12 maintains a certain minimum strength, and that the openings and the projection on the key portion 28 fit each other so well that there is no danger of the stay device 12 leaving the projection, e.g. in case of strong wind. This can be further assured by means of a not-shown fitting on the frame 2, which fitting projects over the second portion 16 of the stay device when the stay device is in its locked position parallel to the frame 2. Furthermore, it is required that the projection on the key portion 28 is suitably high so that it can obtain a proper grip of the second portion 16 of the stay device, and that the key portion 28 is se-

cured sufficiently to the frame 2 so that it does not yield for the weight of the window. In Fig. 2, the projection is shown with a plane surface perpendicular to the symmetry axis of the key portion, and with sides parallel to this axis, however, it may of course also be provided with bevelled top side and/or non-straight sides, without any deviations being made from the scope of the invention.

The outer end of the second portion 16 of the stay device acts as a handle at operation. Therefore, the second portion is provided with two bends 30 and 31, the handle end being raised so much over the frame 2 that there is room for the fingers of a hand below. Alternatively, a specific handle (not shown) can be provided on the second portion 16 of the stay device.

Fig. 3a shows the situation where the window is drawn toward the frame and where the second portion of the device is essentially perpendicular to the frame member 4. The first engagement means 20 is an opening provided in the joint 17 between the two portions 14 and 16 of the stay device fitted on the corresponding second engagement means 19 in the form of the projection on the key portion 28. The projection is placed in the first engagement means 20, both being provided with an oblong shape with rounded ends. Because of the tension produced by a compression of the weather strips 25 in connection with the closing of the window, the projection abuts on the side of the joint opening facing away from the movable part of the window.

When turning the second portion 16 of the stay device, as shown by the arrow A in Fig. 3a, the

key portion 28 is brought from its open position to the locked position, as shown in Fig. 3b. When the turning is finalized and the second portion 16 of the stay device is parallel to the frame 2, the projection is again symmetrical about the direction B in which the force from the tension in the weather strip 25 acts on the first portion 14 of the stay device, thereby creating a balance.

As appears from Figs. 2 and 3, the stay device 10 is in the shown design made by oblong, plane pieces constituting the first portion 14 and the second portion 16 of the stay device, even though other designs are also thinkable.

Fig. 4 illustrates that the joint 17 between 15 the two portions of the stay device in this embodiment is created in the way that two sheet pieces 32a and 32b at the second portion 16 of the stay device have each their circular projection 33a and 33b fitting in a through hole 34 in the first portion 20 of the stay device. The sheet pieces 32a and 32b are secured on each their side of the second portion 16 of the stay device, and their respective projections 33a and 33b reaches exactly halfway through the hole 34 such that they meet in the centre and 25 thus retain the first portion 14 of the stay device. The joint opening in the joint 17 is provided in the projecting portions 33a and 33b of the sheet pieces 32a and 32b, and the material thickness in the opening edge is thus the sum of material thickness 30 ness of the sheets 32a and 32b. Other structures of the joint and the joint opening can be used equally with the one described here, it need only to be assured that the joint opening is turned together with

the second portion 16 of the stay device, and that the opening edge is sufficiently strong.

As illustrated in Figs. 3a, 3b and 4, a ratchet 35 is embedded in the second portion 16 of the stay device and by the pressure from the spring 36 is forced into cut-outs 37 in the first portion 14 of the stay device. An unintentional turning of the second portion 16 of the stay device is thus prevented. However, the pressure from the spring 36 is not stronger than the ratchet 35 is automatically pushed backward and out of the cut-out 37, when the second portion 16 of the stay device is turned between its open and closed position. There is also another solution in which the spring pressure is stronger and can be relieved manually e.g. by pushing a button. This solution can be particularly interesting where the window should be childproof. The spring 36 and the ratchet 35 can alternatively be built in the first portion 14 of the stay device and the cut-outs 37 in the second portion 16.

In the above, the stay device 12 is referred to as being secured to the window sash 7 and in the illustration in Fig. 2, this securing is provided between a centre piece 24 arranged along the pane 23. However, the use of special types of panes permits other designs where the stay device 12 is e.g. glued to the pane 23 or secured to other parts of the window.

Fig. 2 shows further a design of the lock device 13 placed in the window frame 2. The key portion 28 is connected to the active part 38 by means of a pin 39 inserted through holes in the two parts and being in engagement with a cut-out in the

lower edge of the lock bushing 40. The key portion 28 has a shaft 41, above which a spring 42 is arranged with its one end abutting on the underside of a corbel 29 on the key portion 28, and with its 5 second end abutting on an abutment 43 in the lock bushing 40. When the window is unlocked, both the projection of the key portion 28 and the corbel 29 project from the frame, and when the joint opening of the stay device is placed over the projection, the 10 underside of the second portion 16 of the stay device will abut on the top side of the corbel 29. In order to lock the window, the stay device is now pressed down toward the frame 2, the corbel 29 also being pressed down, the spring 42 is com- 15 pressed toward the abutment 43 and the active lock part 38 is pressed downward and through the oblong hole 27 in the passive lock part 22. When the second portion 16 of the stay device is then turned toward its locked position, both the key portion 28 20 and the active lock part 38 fixedly connected hereto will follow. Two shoulders 44 of the active lock part are thus brought to abutment on the underside of the passive lock part 22, the shoulder width of the active lock part 38 being longer than the 25 shortest distance from edge to edge in the hole 27. The spring 42 forces the active lock part 38 upward and assures thus a stable locking. When the second portion 16 of the stay device and thereby the key portion 28 are turned again to the open position, the active lock part 38 is released from the 30 passive lock part 22, the spring 42 pulling the active lock part 38 upward from the hole 27.

An alternative embodiment of the stay device

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12 appears from Figs. 5a and 5b where the second portion 16 of the stay device 12 is provided with a first engagement means 20 in the form of a pin with an oblong head. Furthermore, the stay device 12 5 can be provided with additional retaining means 20a, e.g. as shown in the form of an additional pin, and the end of the stay device. Fig. 6 shows a second engagement means 19 in a frame member, as the engagement means 19 as shown can be an oblong opening 10 form-fitted to the first engagement means 20 on the stay device. As indicated, a corbel 45 or the like can furthermore be provided to cooperate with the retaining means 20a on the stay device 12, when this is in the locked position.

15 An embodiment of the stay device 12 and the lock device 13 appears from Fig. 7a showing a section through a bottom frame member 4 with a second engagement means 19 in the form of a hole and a stay device 12 comprising a first portion 14 and 20 a second portion 16, the first and second portion being connected in a joint 17 with a swivelling axis 18. The stay device 12 is shown in a position where the window is closed and the stay device 12 is arranged at a distance from the frame, the stay 25 device being turned upward about the hinge axis 15. As shown, the first engagement means 20 arranged on the second portion 16 of the stay device 12 in this example a pin provided at the joint 17 such that the pin pivots about the swivelling axis 18. 30 The stay device 12 can as shown also be provided with one or more retaining means 20a in the form of pins to be inserted in the second engagement means 19. In particular, the end of the second portion 16

of the stay device 12 can be designed such that the end forms a retaining means 20a to be inserted in the opening in the frame. Fig. 5b shows the stay device 12 in the first position where the first engagement means 20 on the stay device is brought to engagement with the second engagement means 19 in the frame. Furthermore, a separate lock device 13 can be provided in the frame, in which device the first engagement means 20 is also in engagement.

10 The lock device 13 comprises an active lock part 38 in the form of a pin which can enter into engagement with the passive lock part 22, here designed as shown in Fig. 8. The second position of the stay device 12 is shown in Fig. 7c. In this position, a

15 locking has been established between the engagement means 19 and 20, and the active lock part 38 and the passive lock part 22. The locking is obtained in that the second portion 16 of the stay device is turned about the swivelling axis 18 such that the

20 first engagement means 20 in the form of the pin with the oblong head is correspondingly turned in the opening such that shoulder of the pin head abut on the edges of the opening as indicated in Fig. 7c. Furthermore, the first engagement means 20 brings

25 along the lock device 13 when turning such that the active lock part 38 is brought in engagement with the passive lock part 22, as shown more clearly in fig. 8. Fig. 8 shows a passive lock part 22 and an active lock part 38, the active lock part being

30 shown with a continuous contour in the non-active position and with broken contour in the active position where the active lock part 38 is in engagement with the passive lock part 22.

The above-mentioned designs of the lock device are solely to consider as examples of possible designs. The person skilled in the art will without any problems be able to conceive other designs still being within the scope of protection.

P A T E N T C L A I M S

1. A device consisting of a stay device (12) with a first portion (14) and a second portion (16) pivotally connected to the first and with a first engagement means (20) rotationally locked in relation to the second portion (16), which first portion (14) in a mounted state is adapted to be hingedly connected to a movable sash member of a window, a second engagement means (19) which in a mounted state is arranged at a frame member of a window, which engagement means (19, 20) are mutually form-fitted, and a lock device (13), characterized in that the lock device (13) has a passive lock part (22) adapted to be connected to the sash member in a mounted state and an active lock part (38) adapted to be arranged in a mounted state at the frame member where the active lock part (38) is arranged such that it can be operated by the stay device (12).

2. A device according to claim 1, characterized in that the active lock part (38) is provided in a movable key portion adapted for rotationally locked engagement with the first engagement means (20).

3. A device according to claim 1, characterized in that the stay device (12) is provided with at least one retaining means (20a).

4. A device according to any of the claims 1-3, characterized in that the second engagement means (19) is a projection, whereas the first engagement means (20) is an opening.

5. A device according to any of the claims 1-3, characterized in that the second engagement means (19) is an opening, whereas the first

engagement means (20) is a projection.

6. A window construction (1) comprising a frame (2) composed of several frame members (3, 4, 5, 6), a sash (7) pivotally connected to the frame (2) and composed of several sash members (8, 9, 10, 11), and a device consisting of a stay device (12) and a lock device (13), which stay device (12) comprises a first portion (14) hingedly connected at a sash member (8, 9, 10, 11) to a hinge axis (15) and a second portion (16) pivotally connected to the first portion (14) in a joint (17) with a swivelling axis (18), characterized in that the stay device (12) can be operated for displacement toward a frame member (3, 4, 5, 6) by turning about the hinge axis (15) to a first position for engagement between a second engagement means (19) provided at the frame member (3, 4, 5, 6) and a first engagement means (20) correspondingly provided at the stay device (12) and being rotationally locked in relation to said second portion (16), and that the stay device (12) can be operated to subsequent turning movement about the swivelling axis (18) to a second position where a locking is established between an active lock part (38) and a passive lock part (22), the active lock part being able to turn about an axis of rotation essentially coaxial with the swivelling axis (18) when the stay device is in its first position.

7. A window construction (1) according to claim 6, characterized in that the second engagement means (19) is a projection, whereas the first engagement means (20) is an opening.

8. A window construction (1) according to claim 6, characterized in that the second

engagement means (19) is an opening, whereas the first engagement means (20) is a projection.

9. A window construction (1) according to any of the claims 6-8, characterized in that the stay device (12) is provided with at least one retaining means (20a).

10. A window construction (1) according to any of the claims 6-9, characterized in that one of the engagement means (19, 20) constitutes a rotational key portion which, when turned, brings the active lock part (38) into or out of engagement with the passive lock part (22).

11. A window construction (1) according to any of the claims 6-10, characterized in that the engagement means (19, 20) constitute the lock parts (38, 22).

12. A window construction (1) according to any of the claims 6-11, characterized in that the passive lock part (22) is a separate element connected to the sash (7).

13. A window construction (1) according to any of the claims 6-12, characterized in that the second portion (16) of the stay device (12) comprises means for engagement with a retaining means arranged in the frame member (3, 4, 5, 6), when the stay device is in said second position.

14. A window construction (1) according to any of the claims 6-13, characterized in that frame member (3, 4, 5, 6) is provided with an opening (26) through which the passive lock part (22) is entered in the closed position of the window.

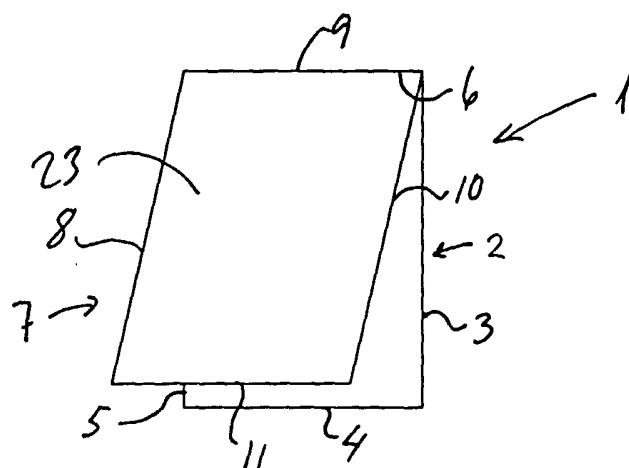
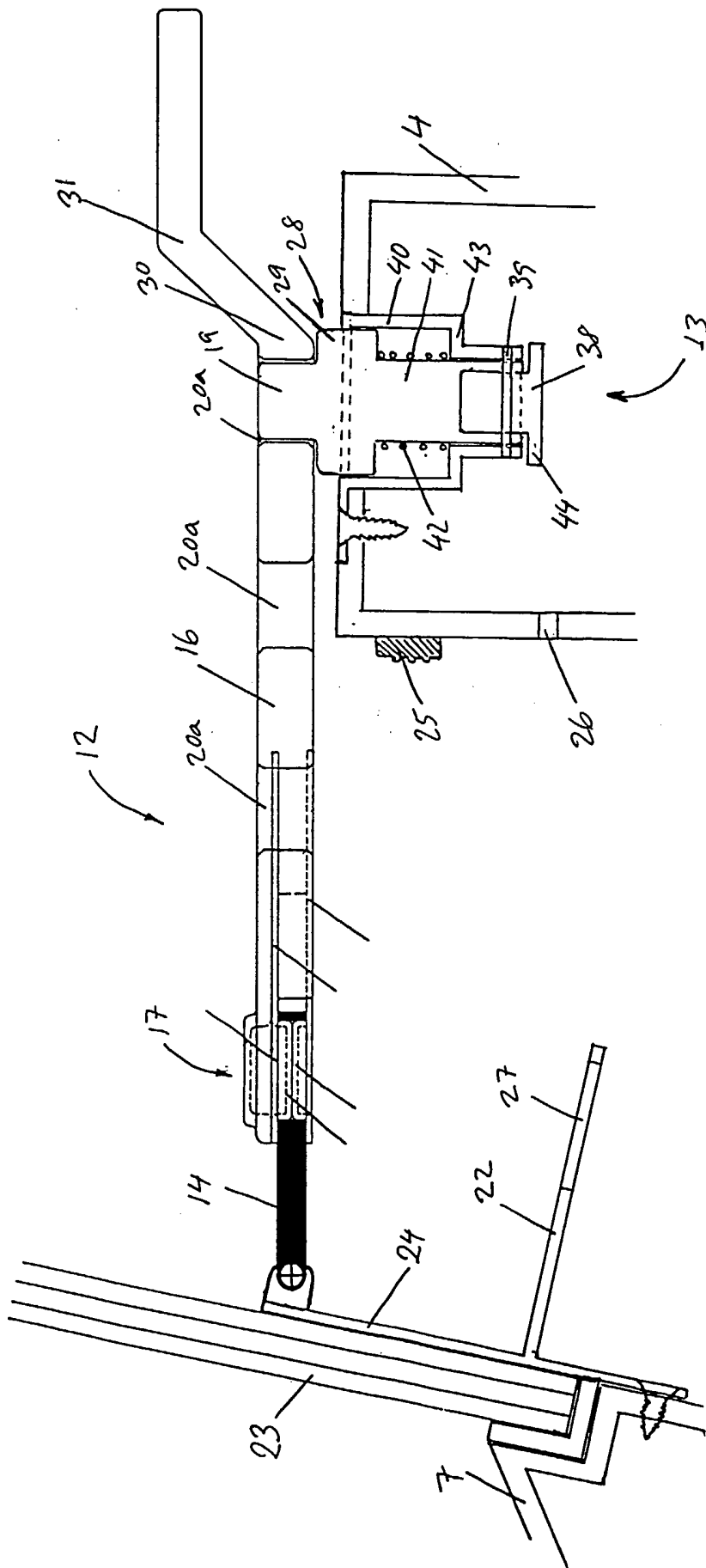
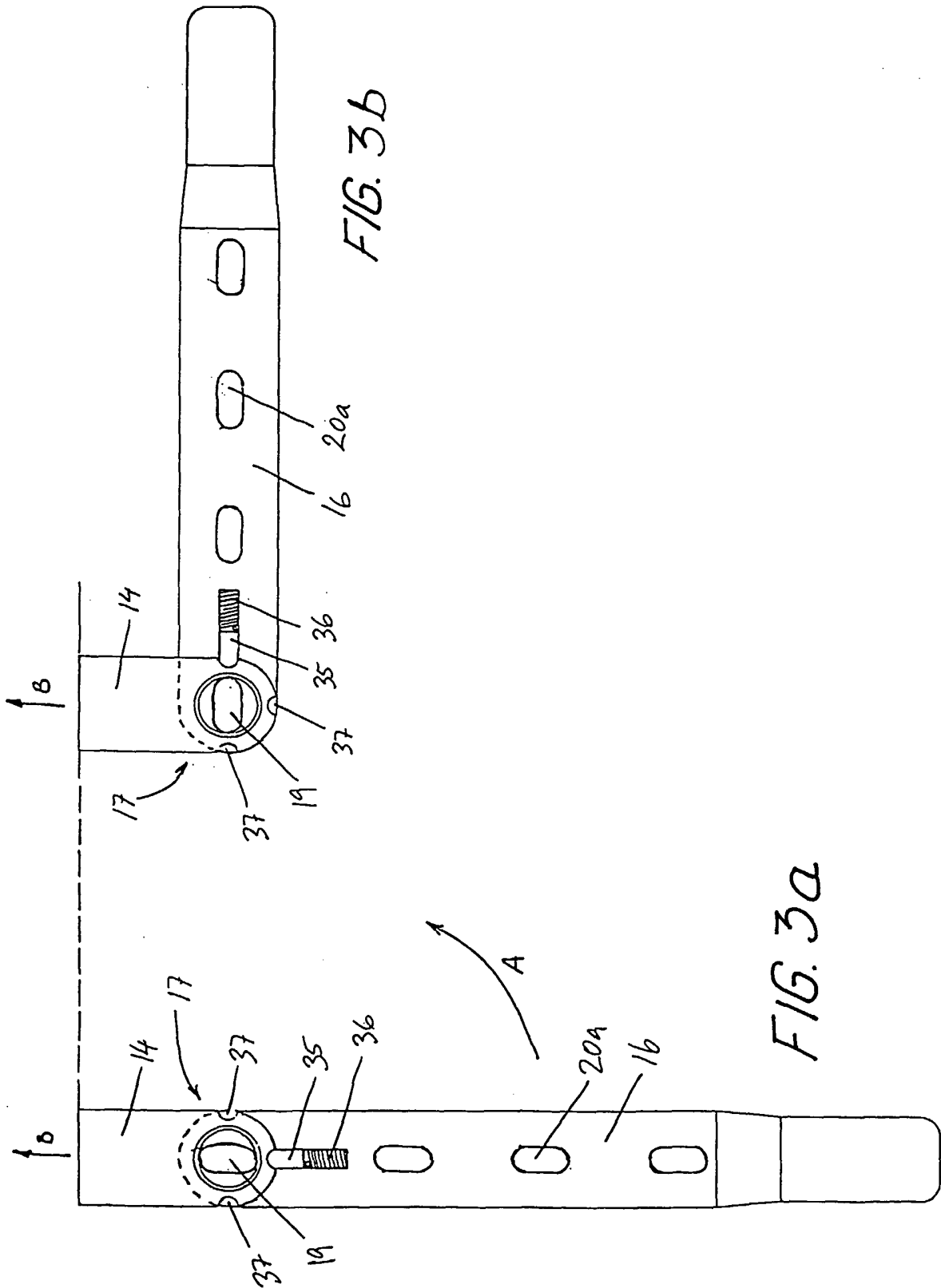
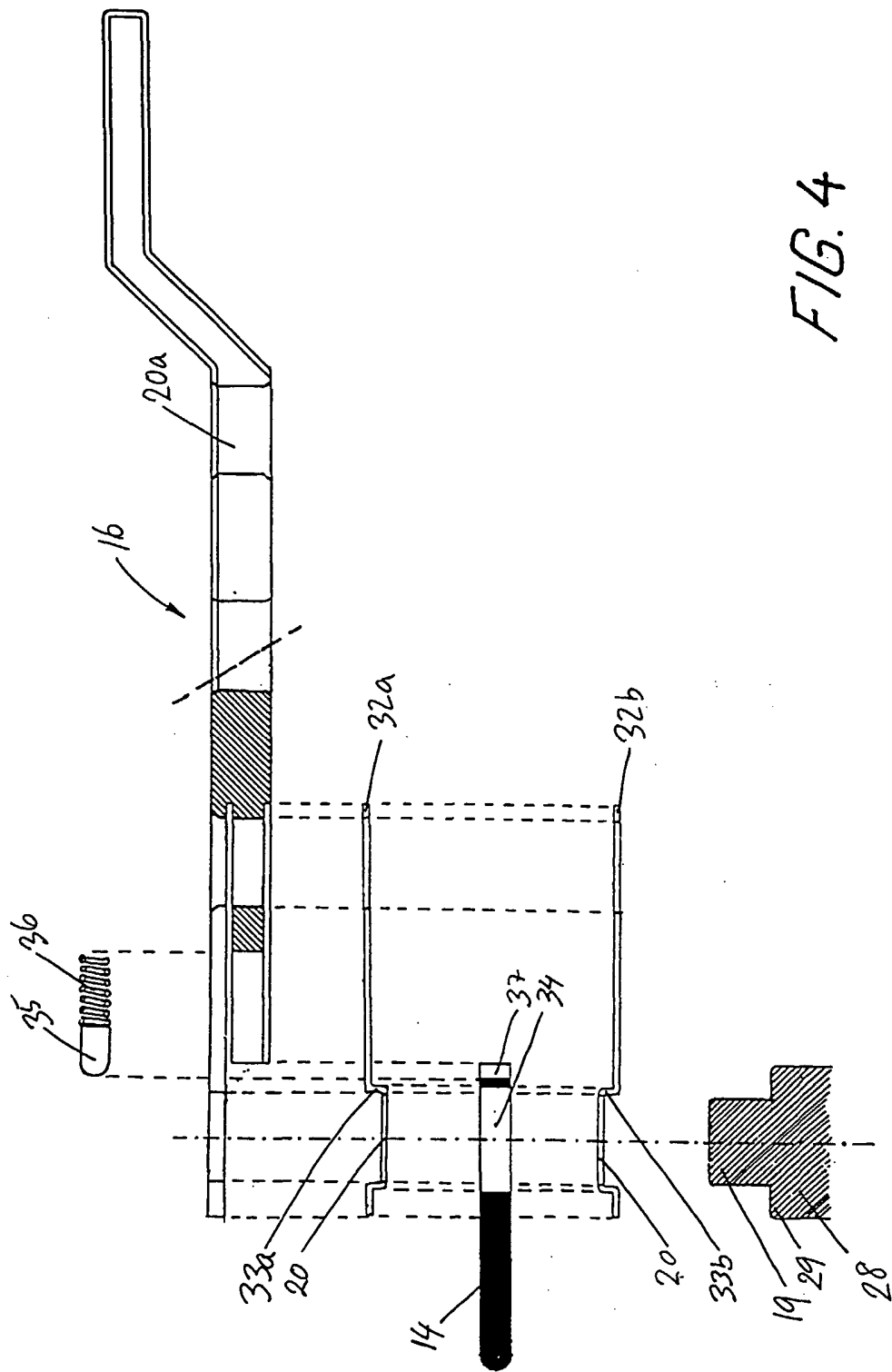


FIG. 1







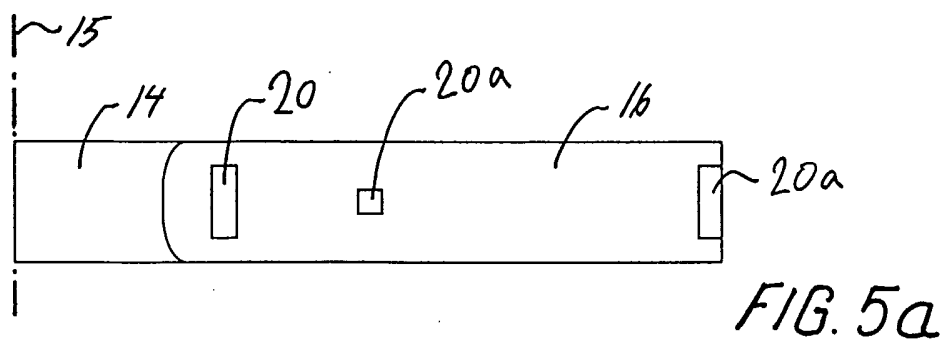


Fig. 5a

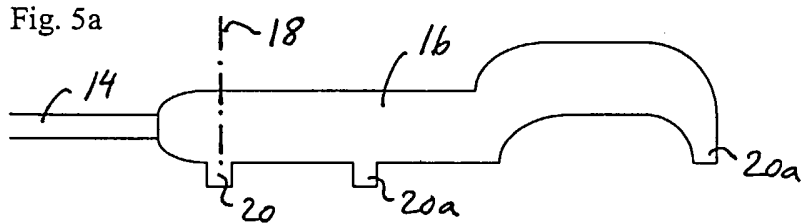


Fig. 5b

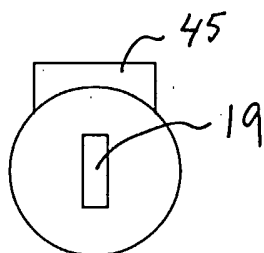


Fig. 6

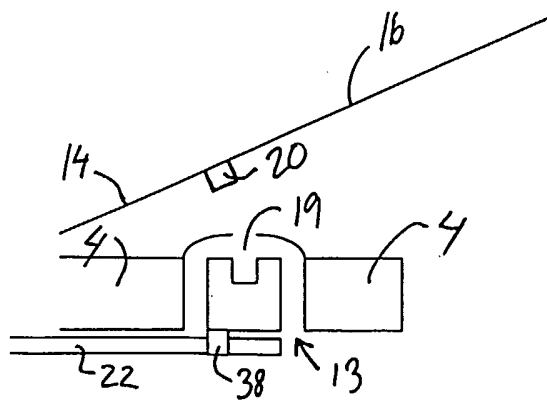


Fig. 7a

FIG. 7a

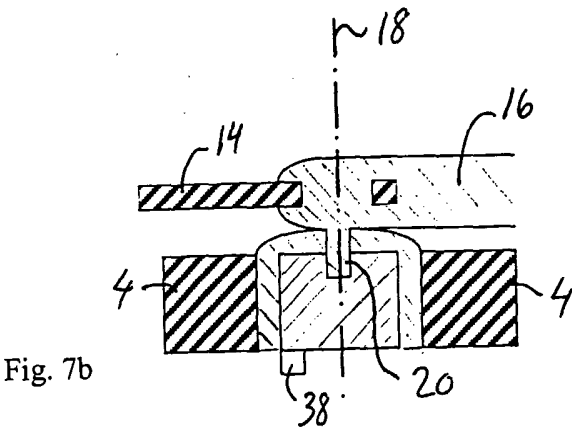


FIG. 7b

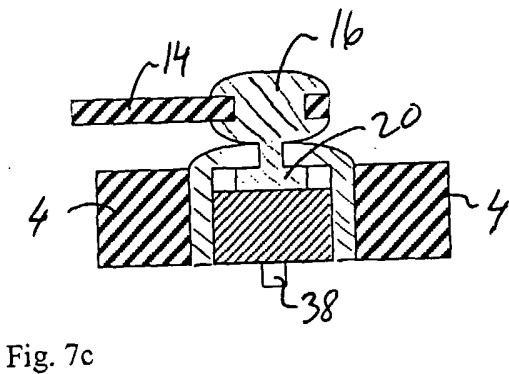


FIG. 7c

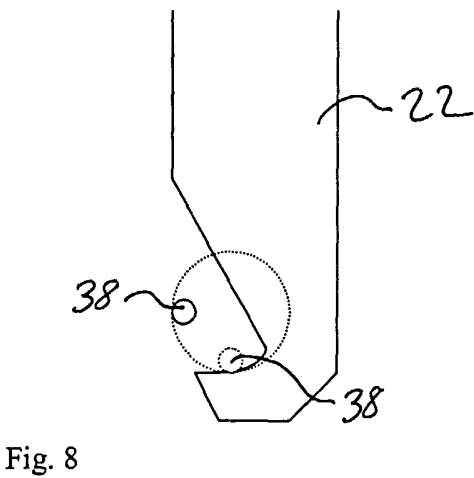


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 02/00815

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E05C 17/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: E05C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 19542601 A1 (BRAAS GMBH), 22 May 1997 (22.05.97) --	
A	NL 7405631 A (F.C. VAN HERPEN), 28 October 1975 (28.10.75) -- -----	

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

25 February 2003

Date of mailing of the international search report

03-03-2003

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/DK 02/00815

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
DE	19542601	A1	22/05/97	WO 9718372 A	22/05/97
NL	7405631	A	28/10/75	NONE	